Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Sequences

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

Write your name in the space provided.

Write your answers in the spaces provided in this question paper.

Answer ALL questions.

Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

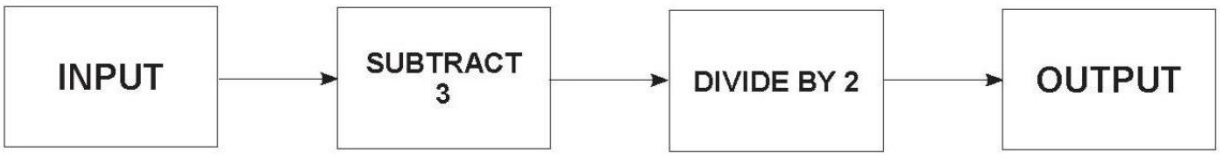
Total Marks :

1) *(a)* Write down the next term in the following sequence and describe the rule for continuing the sequence. [2]

5, 11, 17, 23, ...

Rule: .....

(b) The diagram below shows a number machine.



Using the number machine, calculate

(i) the **OUTPUT** when the **INPUT** is 7 [1]

.....

(ii) the **OUTPUT** when the **INPUT** is –5 [1]

.....

(iii) the **INPUT** when the **OUTPUT** is 10. [1]

.....

2) Describe **in words** the rule for continuing each of the following sequences.

(i) 60 53 46 39 32 ..... [1]

Rule:

.....

.....

(ii) 81 27 9 3 1 ..... [1]

Rule:

.....

.....

3) Write down the next two numbers in the following sequence. [2]

33 26 19 12 ....

.....

.....

4) Describe **in words** the rule for continuing each of the following sequences.

(a) 20 27 34 41 48 .....

Rule: [1]

.....

.....

(b) 2 –6 18 –54 162 .....

Rule: [1]

.....

.....

5) Find the 20th term of the sequence with nth term $4n - n^2$. [1]

.....

.....

.....

.....

6) *(a)* Write down the next term in the following sequence.

21, 18, 15, 12, ...

[1]

(b) Write down the next term in the following sequence **and** describe the rule for continuing the sequence.

2, 6, 18, 54, ...

Rule: .....

.....

[2]

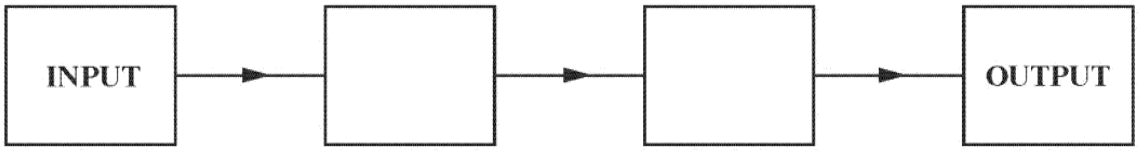
(c) The following numbers have been produced using a number machine.

$2 \longrightarrow 8 \longrightarrow 7$

$5 \longrightarrow 20 \longrightarrow 19$

$10 \longrightarrow 40 \longrightarrow 39$

Complete the boxes for the number machine.



[1]

7) Give the next term in the sequence **and** write in words the rule for finding the next term in the sequence.

1, 3, 9, 27, ...

Rule: .....

.....

[2]

8) *(a)* Describe **in words** the rule for continuing **each** of the following sequences.

(i) 51, 47, 43, 39, ...

Rule: .....

.....

(ii) 243, 81, 27, 9, ...

Rule: .....

.....

[2]

(b) Solve $x + 3 = 14$.

.....

.....

[1]

(c) (i) Write down the next term of the sequence

3, 4, 6, 9, 13, ...

[1]

(ii) Describe in words the rule for continuing the sequence.

.....

.....

[1]

9) A linear sequence of numbers is shown below.
Two of the numbers are missing.

19, ... , ... , 7, 3

Fill in the missing numbers in the sequence.
Write down the rule for finding the next term in the sequence. [2]

.....

.....

.....

10) Find the *n*th term of the following sequences.

(a) 3, 13, 23, 33, 43, ...

.....

.....

[2]

(b) 50, 40, 30, 20, 10, ...

.....

.....

.....

[2]

11) Write down the *n*th term of the following sequences.

(a) 6, 13, 20, 27, ...

.....

.....

[2]

(b) 26, 20, 14, 8, ...

.....

.....

[2]

12) Write down an expression for the *n*th term of the sequence

–2, 1, 4, 7, ...

Answer _____ [2]

13) Write down the *n*th term for the sequence

6, 12, 18, 24, ...

Answer _____ [1]

14) Write down an expression for the nth term of the sequence

–4, –8, –12, –16, ...

Answer _____ [1]

15) Write down an expression for the nth term of the sequence

2, 7, 12, 17, ...

Answer _____ [2]

16) The nth term of a sequence is $n^2 - 3$
Which term of the sequence will equal 78?

Answer _____ [2]